

Mobilizing \$1 Trillion Towards Climate Action

An Analysis of the National Climate Bank

Summary

The National Climate Bank Act introduced in the Senate on July 8, 2019 establishes an innovative new financial institution as a standalone, independent nonprofit organization known as the National Climate Bank (Climate Bank). Its mission is to reduce greenhouse gas emissions and consumer energy costs by investing in clean energy and related projects that provide nationwide economic benefits. Its operations are informed by the track record of existing Green Banks, which have demonstrated their success across the United States and around the world.

The Climate Bank created by this bill is capitalized with \$35 billion of federal funds. Based on the track record of comparable institutions, CGC's analysis shows that the Climate Bank would be able to mobilize up to \$1 trillion of total investment over 30 years. The Climate Bank would be able to drive this investment using techniques pioneered by existing Green Banks and global development banks.

The multiplication of the Climate Bank's investment plays a critical role in achieving climate goals currently under discussion at both federal, state and local levels. Many Congressional leaders have advocated a target of 100% renewable energy by 2030, and states and

cities are increasingly also exploring aggressive renewable energy and carbon reduction targets. This ambition is appropriate given the urgency of the climate crisis, but it will require an infusion of capital well above business-as-usual trends. Recent estimates show that a 100% clean electricity grid in the United States could require \$4.5 trillion of investment.¹ This suggests that any proposed federal climate investment policies must be catalytic and drive hundreds of billions, if not trillions of dollars to have a meaningful impact.

This memo explores the financial model of the Climate Bank, and reviews comparable institutions for perspective on the amplification of impact that the Climate Bank could achieve using similar techniques.

In borrowing against its capital and leveraging its balance sheet, the Climate Bank follows a similar model to commercial banks and development banks. By drawing in private investment at the project level, the model would be most similar to existing Green Banks within the US and around the world. The Climate Bank would be similar to all of these institutions in that would recycle its capital, lending the same dollars repeatedly as loans are paid back and the funds re-used.

About CGC

The Coalition for Green Capital (CGC) is a non-profit organization focused on accelerating the growth of clean energy markets through the creation of Green Banks. CGC offers a unique and proven capacity as the leading creator, advocate, and expert on Green Banks since 2009. CGC works directly to support the formation of Green Banks with governmental and civil society partners, and provides on-going consulting and guidance to operating Green Banks. For more information visit coalitionforgreencapital.com/.

Structure and Governance of the National Climate Bank

The Climate Bank is designed as a private non-profit corporation formed at the direction of the federal government, and capitalized with \$35 billion of federal funds over six years. Like any non-profit corporation, it would be incorporated in a specific domestic jurisdiction (in this case the District of Columbia), and have a charitable purpose. It would be governed by a Board of Directors, the composition of which is spelled out in its founding legislation.

The National Climate Bank is empowered to work with a diverse range of technologies and markets, as shown in Box 1.

Box 1: Eligible Project Types

- Renewable Energy
- Energy Storage
- Transportation
- Clean Energy Transmission
- Energy & Water Efficiency
- Decarbonized Industrial Processes
- Reforestation
- Agriculture Projects
- Climate Resiliency
- Reduction in carbon-intensive power generation and carbon assets (part of Bank's Cash For Carbon program²)
- Any other area identified by Board that is consistent with Climate Bank purpose

In each case, the Climate Bank would work make projects and markets that were previously unattractive to private capital into viable investment opportunities, whether through acting as junior debt, providing a partial guarantee, or using other mechanisms for mitigating risk.

Commercial banks and similar depository institutions are legally certified and regulated as banks by the Office of the Comptroller of Currency (OCC). Because the Climate Bank does not receive individual deposits, it is not legally a bank and is therefore not certified and regulated by the OCC as a financial institution. However, the Climate Bank reports its activities to the OCC, and direct oversight will be provided by an Inspector General above and beyond the governance of the Board of Directors.

The Climate Bank is chartered for 30 years. Its legislation does not specify how its remaining assets and funds are to be used upon the expiration of its charter. Under normal non-profit corporate law, remaining assets at the time of dissolution must either be used for aligned charitable purposes or returned to the original donor. In the case of the Climate Bank, this likely means that assets on the Climate Bank's balance sheet would either be sold to other investors or held and managed until they are fully paid off. Any remaining cash would likely be returned to the U.S. Treasury.

Key Financial Techniques

Balance Sheet Leverage

Nearly all commercial and development banks borrow money from capital markets to increase their lending capacity, and the Climate Bank is designed to be able to do so as well. Over the course of its 30-year charter, it can build up the track record and risk profile necessary to borrow funds, and then lend out those borrowed dollars rather than relying purely on its federal capital.

In estimating the amount of balance sheet leverage that the Climate Bank would be able to achieve, we can review the comparable institutions discussed in more detail later in the paper, including commercial banks and global development banks.

Balance sheet leverage is affected by a number of factors. These include the strength and quality of the existing balance sheet,³ the entity's ability to generate cash flow to serve debt, the rate at which an institution would be able to borrow, and the rate at which it desires to lend. Any institution needs to lend capital at a higher rate than it paid to borrow it, so the ability to borrow at low costs and lend at higher costs is relevant to the ability to grow its balance sheet leverage. The largest commercial banks have balance sheet leverage ratios of 10:1. Other institutions like development banks typically have lower balance sheet leverage ratios.

Project-Level Leverage

Green Banks around the world have developed numerous techniques to leverage, or draw in private co-investment at the project level. These techniques allow each Green Bank balance sheet dollar to go farther. This means the Green Bank uses a limited amount of its own capital to bring private capital off the sidelines into a project, enabling the project to move forward.

For example, private investors may be avoiding a project that seems risky. If a Green Bank provides the junior 20% of the project debt, in practice the Green Bank is offering to be the first to take a loss if the project proves to be unprofitable. That could be the deciding factor for private investors to come forward with the remaining 80% of project debt. In this example, a single Green Bank dollar is able to cause \$4 of private co-investment, for \$5 of total investment, in addition to the project's equity investment.

The amount of private capital that can be leveraged at the project level is affected by factors including the types of projects that an institution invests in, the amount of risk that the institution is willing to take on, and the amount of return the institution needs to generate to cover operating costs. For example, a Green Bank may need to put only 10% of the capital into a project in a more mature market in order to attract the remaining private capital, but may need to put 50% of the capital into a project in a less mature market. This in turn affects the overall project-level leverage ratio of the Green Bank.

Green Banks around the world have varying project-level leverage ratios at the institutional level ranging from 2:1 to 10:1. The average for U.S. state and local Green Banks is 3.4:1.⁴

Capital Recycling

Capital recycling also has a significant effect on an institution's total investment impact. Recycling means that dollars deployed by an institution come back and are able to be lent again, multiple times.

Institutions can recycle capital through several mechanisms. The first is principal and interest repayment on the loans it makes to projects. If a loan is made with a ten-year term and it is fully amortized in a straight-line fashion, that means that the institution will have its loan principal repaid, with interest, in equal installments over 10 years. The funds repaid in year one could be recycled into a new loan immediately, and all the capital will have been returned by the end of the ten-year term.

The second mechanism for recycling capital is refinancing. A project with a ten-year loan may decide after only three years that it wants to refinance the debt on the project and is able to secure a new loan from a private lender.

The proceeds of that refinancing are used to pay off the original loan, enabling re-use of the capital by the original institution.

The third mechanism is asset sales. As an institution makes loans, it will hold those loans as

assets on its balance sheet. In some cases, when the loans reach a certain maturity, or a group of loans can be bundled together, an institution can sell them as a group to private market participants. This allows the institution to make its capital back more quickly, rather than waiting for the loan to be repaid over time.

A final mechanism is securitization. Under this structure an institution bundles a group of loans on its balance sheet. But rather than selling the group of loans as a whole to a private actor, the institution "securitizes" the repayments off of those loans and sells bonds against it. The repayments from the specified loans are pledged as cash to repay the bond holders, and the issuing institution is able to recoup the total value of those future repayments upfront through the bond sale.

Overall, rates of capital recycling are affected by the length of the loans being made, and the degree to which the institution relies on techniques like asset sales that enable faster turnarounds. Loans for energy projects tend to have long terms, which is why recycling is typically accelerated by selling the loan or refinancing rather than holding to maturity.

Comparable Institutions

Commercial Banks

In many respects the Climate Bank would operate like a commercial bank, using a similar set of financial tools. One tool used by commercial banks is balance sheet leverage, the practice of borrowing against their capital to greatly increase the amount they are able to lend. The largest commercial banks are considered very safe entities to lend to, and can borrow money at very low rates. When they lend that same capital out to individual borrowers, they charge a higher rate and are able to make a profit.

The practice enables the commercial bank to lend more money to customers than they initially started with. The largest commercial banks can borrow and lend ten dollars for each dollar they hold directly on their balance sheet; this is referred to as a “balance sheet leverage ratio.”

The Climate Bank would also differ in several key ways from commercial banks. The Climate Bank would be a non-profit, seeking to maximize GHG emissions reductions, rather than a business seeking to maximize profit.

This has implications for the amount that the Climate Bank would borrow, in that it would be more motivated than a commercial bank to lend at low costs, and thus may be incentivized to borrow less than a commercial bank in order to keep its own costs low.

As a new institution, the Climate Bank would also not have the same track record as an established commercial bank right from the start, and it would take time for bond holders to become comfortable lending to the Climate Bank. In addition, the asset portfolio of a typical commercial bank can be expected to have a higher quality and greater liquidity than the project portfolio of the Climate Bank. (This is in part because commercial banks hold large amounts of U.S. government securities, and in part because the Climate Bank’s portfolio will be made up of more complex assets.) Because of this, the Climate Bank may not be able to borrow at rates as low as a commercial bank early in its operations. This could change over time as the Climate Bank builds up a longer track record and a pipeline of profitable projects for investment.

Table 1: Balance Sheet Leverage of 5 Largest U.S. Commercial Banks⁵

Commercial Banks	Total Assets (millions)	Total Equity (millions)	Balance Sheet Leverage (Assets/Equity)
JP Morgan Chase	\$2,622,532	\$256,515	10
Bank of America	\$2,354,507	\$265,325	9
Citigroup	\$1,917,383	\$197,074	10
Wells Fargo	\$1,895,883	\$197,066	10
Goldman Sachs	\$931,796	\$90,185	10

Development Banks

Development banks are financial institutions that primarily exist outside the U.S. The Climate Bank shares similarities with these entities, in that they likewise are purpose-built, mission-driven finance institutions. Development banks are formed by one or more countries investing public funds to provide the initial capitalization to the institution.

Development banks typically receive their initial capital from seed investor countries in the form of “paid-in capital.” As a development bank’s initial round of capital is lent out to projects, the development bank builds a track record of performance and a balance sheet of return-generating assets. Over time, this allows the development bank to go out to capital markets and borrow money from private investors at low rates, building up balance sheet leverage in a manner similar to a commercial bank.

Development banks typically have lower balance sheet leverage ratios than commercial banks. These institutions work diligently to maintain

very high credit ratings in order to access to the bond market. As a result, they want to maintain strong balance sheets with lower leverage than typical commercial banks. The Climate Bank’s considerations around balance sheet leverage would be similar to those of development banks.

Table 2 shows four development banks’ balance sheet leverage calculated in two ways: both with and without the banks’ callable capital. Callable capital is money that world governments have promised to make available to the development banks if needed, but have not transferred to the development banks. The availability of callable capital can help an institution to borrow more money at lower rates, although not to the same extent as having the same amount of funds directly on hand. The National Climate Bank would not have a line of callable capital – all \$35B will be appropriated in the first six years of existence - and as such its potential balance sheet leverage ratio may be in between these two numbers as demonstrated by the development banks.

Table 2: Example Development Bank Balance Sheet Leverage⁶

Development Banks	Total Assets (millions) ⁷	Total Equity (millions)	Balance Sheet Leverage (Assets/Equity)	Callable Capital (millions)	Balance Sheet Leverage (Assets/(Equity + Callable Capital))
Asian Development Bank	191,860	50,984	3.8	140,550	1.0
European Investment Bank	555,793	71,325	7.8	221,585	1.9
Inter-American Development Bank	129,459	32,929	3.9	164,901	0.7
World Bank (IBRD only)	403,056	43,518	9.3	258,274	1.3

Importantly, development banks are able to multiply their impact in an additional way through the recycling of capital. As they make loans to projects and those loans are repaid with interest, development banks are able to lend the same capital a second or third time. Loan terms can vary greatly depending on the details of the deal. One IMF working paper surveyed thousands of loans from development banks to projects in developing countries and reported a mean loan maturity of about seven years,⁸ although development banks can also make loans that are decades long.⁹ Depending on the duration of the loans and the age of the institution, recycling can multiply an institution’s impact many times over.

Table 3 provides a way to illustrate the impact of balance sheet leverage and capital recycling. The table compares the total capital paid in to the development banks over their cumulative history, compared to the amount the institutions have invested in a single year (2018). As a rough approximation, these institutions are able to invest an amount in a given year that’s at least as great as their total paid-in capital.

Over time, the result is a track record of investment much greater than the paid-in capital base. If the National Climate Bank was able to invest equivalent to its paid-in capital each year for 30 years, its cumulative investment would come to \$975 billion. Any project-level leverage that the Climate Bank achieved would further increase this amount.

Also note that multi-lateral development banks like the World Bank do not have the full faith and credit backing of the countries that formed the bank. The debt issued by the World Bank that allows it to increase its lending capacity is not guaranteed by any government. It is supported purely by the creditworthiness of the development bank itself (which is inclusive of both its paid-in and uncalled capital), and the returns generated by the underlying loans provided to its borrowers. The Climate Bank is similarly not be backed by the full faith and credit of the U.S. government, and it would not have callable capital beyond its initial capitalization.

Table 3: Example Development Bank Total Investment Impact per Paid-in Capital

Development Banks	Cumulative Paid-In Capital (billions)¹⁰	2018 Loan Disbursements (billions)	Total Annual Lending per Dollar of Paid-in Capital
Asian Development Bank	7.415	13.7	1.85
European Investment Bank	71.325	451.121	6.32
Inter-American Development Bank	11.851	11.304	0.95
World Bank (IBRD only)	16.5	18.761	1.14

Existing Green Banks in U.S. and Abroad

The Climate Bank would be the first national Green Bank in the U.S., but there is already a growing ecosystem of U.S. Green Banks at the state and local level. The most common structure for these Green Banks is similar to that of the proposed Climate Bank, in that the associated government provides capital to enable financing activity.

Unlike commercial banks or development banks, Green Bank institutions do not yet exist at the scale or maturity to leverage funds directly on their balance sheet by borrowing from capital markets. However, they do achieve project-level leverage in many ways, crowding-in private capital on a project-by-project basis. On average, Green Banks in the U.S. have mobilized \$3.40 in private project investment for every dollar directly invested, for a total of \$3.67 billion in investment.¹¹

State and local Green Banks also recycle capital. The New York Green Bank (“NYGB”) has a particularly sophisticated approach to evaluating and measuring what they call their private capital Mobilization Ratio:

Central to achieving NYGB’s objectives is its ability to efficiently recycle funds. Unlike a pool of public funds that is dispensed once to qualifying projects as non-refundable grants or subsidies, funds entrusted to NYGB are disbursed under commercial arrangements generating investment income and requiring repayment in accordance with agreed terms for each product and counterparty. This means that as each dollar from NYGB cycles through successive investments, benefits will compound. The effective rate of accumulation of these benefits is directly tied to the weighted average holding periods of the financial products that NYGB provides to its clients. Further, as the commercial markets expand into and increasingly accommodate sustainable infrastructure finance needs

previously supported by NYGB, the multiplier effect on NYGB’s activities and investments will continue through market follow-on activity.¹²

Early business plan development documents for the NYGB suggested possible capital recycling of 3x-4x over a 20-year period.¹³ Including both capital recycling and project-level leverage the NYGB expects to achieve a cumulative “Mobilization Ratio” of 8:1 by the time it marks a decade of operation in 2025.¹⁴

National-scale Green Banks outside the U.S. also provide instructive examples, with the two most relevant being the United Kingdom Green Investment Bank (GIB)¹⁵ and the Australian Clean Energy Finance Corporation.

The UK GIB was capitalized with a total of 3.8 billion pounds and has invested primarily in waste-to-energy, energy efficiency and offshore wind, bringing new first-time investors into the burgeoning offshore wind sector in the UK. Within three years from launch, it had catalyzed total investment of over 10 billion pounds, partnering with almost 100 co-investors and achieving total leverage ratio of 3:1¹⁶ based on project-level leverage and capital recycling.

The Australian Clean Energy Finance Corporation (CEFC), Australia’s national Green Bank, was initially capitalized with AU\$10 billion from the federal government, and invests in clean energy projects across the country. In its five years of investing, CEFC has supported projects with a total value of around AU\$19 billion. CEFC has directly invested in more than 110 individual transactions and financed more than 5,500 smaller-scale clean energy projects through its partners, achieving total leverage ratio of over 2:1 based on project-level leverage and capital recycling. In 2018, CEFC’s average loan had a duration of ten years, providing context on its rate of capital recycling.¹⁷

The National Climate Bank's \$1 Trillion Investment Impact

Based on comparisons with these institutions, the National Climate Bank could drive up to \$1 trillion of total climate-related investment, starting from \$35 billion in capitalization with public funds. The exact amount of the Climate Bank's total investment will depend on a number of factors, the most significant of which is the precise breakdown of investments by project type. Allocations to particular technologies or project types are not specified in the Climate Bank's legislation, which is appropriate as it allows the Board and its expert committees to determine the most effective investment pathway. Different projects can achieve widely varying impacts in terms of project-level leverage as well as other environmental and economic impacts. The Board will need to take all of these factors and considerations into account in assembling a diverse portfolio of projects.

As a result, this report does not attempt to make assumptions about the breakdown of the Climate Bank's investments. Instead, it draws broad comparisons to relevant institutions to estimate the potential total investment impact across the Climate Bank's entire time horizon and portfolio.

One of the main categories of comparable institution is development banks, which have achieved balance sheet leverage ratios from almost 4:1 to above 9:1. This technique, combined with capital recycling, has enabled them to disburse investments in a given year at least equal to their cumulative paid-in capital. On top of this, they achieve modest project-level leverage ratios of about 1:1, although they do not optimize for this metric.

Unlike development banks, the Climate Bank would not be able to take advantage of callable capital, so a lower balance sheet leverage ratio on the order of 3:1 could be more comparable, along with three rounds of capital recycling during its 30-year life. The Climate Bank can also be expected to achieve a higher project level leverage ratio more similar to other Green Banks, which have achieved an average in the US of 3.4 to 1. Taken together, these factors would result in a total investment impact just over \$1 trillion.

Using an alternate method of comparison, \$1 trillion may even appear conservative. If the Climate Bank invested equal to paid-in capital each year, its direct investment over 30 years would be \$975 billion. The mobilization of private investment at the project level could increase that impact to more than \$3 trillion based on a 3.4 to 1 ratio.

This estimate also does not account for the Climate Bank's broader potential to cause market transformation. If the Climate Bank is successful, it will open new markets for investment that will ultimately grow and receive financing without any Climate Bank participation. These effects are difficult to measure and are therefore left out of this analysis, but there is some precedent set by other Green Banks.

Addressing the climate crisis will require transforming the energy sector and the nation's infrastructure on precisely this large scale. The Climate Bank's operations are based on established precedents, both in terms of its ability to mobilize private capital, and its ability to reduce greenhouse gases by delivering clean energy at a competitive price that reduces consumer costs. While the Climate Bank's actual total impact will be subject to a range of factors, the National Climate Bank is fully endowed with all of the authorities required to achieve \$1 trillion in impact, giving it the potential to be one of the most powerful tools available to the US government to transform the energy sector, boost the nation's economy, and meet climate change targets.

Notes and Citations

¹ [“Deep Decarbonization Requires Deep Pockets.”](#) Wood Mackenzie. June 2019.

² The Cash for Carbon Program is a component of the National Climate Bank Act that authorizes the Climate Bank to use its resources to accelerate the retirement of carbon-based power generation like coal-fired power plants, and to acquire carbon assets, like coal mines, in order to reduce GHG emissions. This provision provides opportunities for the Climate Bank to invest in areas of the US that previously have had less clean energy economic development.

³ This is typically based on the amount of equity, or paid-in capital, on the balance sheet compared to the amount of existing assets or debt. It also depends on the quality (i.e. risk/return profile) of the existing assets.

⁴ [Annual Industry Report of the American Green Bank Consortium.](#) June 2018.

⁵ Data collected from most recent financial statements of each respective institution.

⁶ Data collected from most recent financial statements of each respective institution.

⁷ All figures in USD, except EIB, which is in EUR.

⁸ [“Borrowing Costs and the Role of Multilateral Development Banks: Evidence from Cross-Border Syndicated Bank Lending.”](#) IMF. December 2018

⁹ [“Multilateral Development Banks: A short guide.”](#) ODI. December 2015.

¹⁰ All figures in USD, except EIB, which is in EUR.

¹¹ [Annual Industry Report of the American Green Bank Consortium.](#) June 2018.

¹² [NY Green Bank Annual Review 2018-19 and Annual Business Plan 2019-20](#), Case 13-M-0412; June 19, 2019, footnote 17.

¹³ [“New York State Green Bank Business Plan Development.”](#) Booz&Co. Final Report, Sept. 2013.

¹⁴ [NY Green Bank Annual Review 2018-19 and Annual Business Plan 2019-20.](#)

¹⁵ The UK GIB was sold by the UK government to Macquarie on X date, and renamed the Green Investment Group in its now-private form. Data cited here refers to activity of the UK GIB while it was still a publicly owned Green Bank.

¹⁶ [“UK Green Investment Bank helps mobilise £10bn of capital into UK green infrastructure.”](#) Green Investment Group. Nov. 2015.

¹⁷ [“Publications: Quarterly Reports.”](#) CEFC. Accessed Aug. 2019.